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ABSTRACT

The Northeastern Utah Telelearning Project was created in 1985 to remedy problems of meeting core curriculum requirements and providing educational equity in rural schools, and to provide cost effective educational delivery systems to school districts. It was determined that a distance educational computer network using audiographic teleconferencing would allow up to five high schools to participate in simultaneous classroom discussion. The system, which included microcomputers, computer graphics, and telecommunications technology, was used initially by three high school teachers. The stated goals of the project were: (1) the provision of additional instructional programming for secondary and adult students in high school and college course work; (2) the provision of educational equity to all rural students; (3) the expansion of higher education and college credit offerings in rural areas; and (4) the expansion of informational/educational delivery service to all citizens within the area. Three years of successful operation has resulted in quality, cost-effective education for rural students. (3 references) (DB)

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USING HIGH TECHNOLOGY IN EDUCATION

THE NORTHEASTERN UTAH TELELEARNING PROJECT

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USING HIGH TECHNOLOGY TO FACILITATE EDUCATIONAL EQUITY IN RURAL SCHOOLS

The schools of Northeastern Utah, like most rural schools throughout the nation are facing economic and educational reforms that are difficult and perplexing to solve. The use of distance learning technologies to remedy the problems of meeting core curriculum requirements mandated by the state, providing educational equity to small rural schools, as well as providing cost effective educational delivery to financially burdened school districts will be discussed in this article.

In 1985 the schools of Northeastern Utah, through the auspices of the Northeastern Utah Educational Services Center of Heber City, Utah, pooled their resources and influence and secured the cooperation of business and state government to study the problem of educational delivery and produce with viable options to overcome the geographical and economic problems of providing quality, cost effective education to rural schools. The outgrowth of that study created the Northeastern Utah Telelearning Project in 1985. I will discuss the philosophy, planning, development, implementation, and operation of our distance learning network and how it has met the goals that educational leaders in our communities determined it should have.

PHILOSOPHY OF DISTANCE LEARNING

The schools of Northeastern Utah, mostly small, rural schools, share many common problems and factors that forced them to look to alternatives in educational delivery systems. These problems and factors are: 1) Geographical isolation of communities. The mountainous geography and difficult weather conditions are common making travel hazardous much of the time. 2) Decreased funding from state and local funding sources. 3) Increased graduation requirements required by state and local agencies. 4) Difficulty in hiring and keeping qualified teachers in rural schools, especially in difficult academic subjects (Science, Math, Physics, German, Computer Sciences, Advanced Art). 5) Desire and support by local school districts to work together to resolve the common problems and use high technology equipment if necessary to accomplish those goals. 6) A necessity of providing educational equity to rural students. All students have a right to receive and outstanding education to prepare them for the workplace or College entrance.

The use of high technology devices to provide a medium for educational delivery had been used in Utah, as well as throughout the nation, since the early 1950's.

After consultation with education leaders at the state and local level, county and state telecommunications agencies, software developers and telephone companies, and others who had gone before in technology applications in education, it was determined that a

system be established that would enable up to five schools at a time to participate in simultaneous classroom discussion. It was decided that cooperating schools in Northeastern Utah would begin their own distance learning program. In researching the literature, we found that distance learning was defined in ways that were identical to our situation. Keegan (1) wrote:

> "Distance learning consists of:
>
> 1. The separation of teacher and learner throughout the length of the learning process.
> 2. Influence of educational organizations in both the planning and preparation of learning materials
> 3. Use of technical media, print, audio, video or computer to unite teacher and learner. Used to carry the content of the course.
> 4. Provision of 2-way communication so that the student may benefit from or even initiate dialogue.
> 5. In the absence of the learning group throughout the length of the learning process, possibility of occasional meeting for didactic or socialization purposes."

With these concepts in mind the educators and technicians that were to be involved were identified. Software vendors were identified and other resources were obtained--(computer vendors, television and teleconferencing devices, financial backing, administrative approval, etc.)

PLANNING AND DEVELOPMENT OF DISTANCE LEARNING

It was determined from investigations throughout the county that several other distance learning technologies were in existence with off-the-shelf hardware. It was coincidental that within the state of Utah, another distance learning project had been started several years earlier. The "Garfield Project used Audio-Graphic

teleconferencing to link three schools together to enable master teachers to present Art, History, and Physics to rural schools in their district. (The Garfield County School district spans much of Bryce Canyon National Park and surrounding areas). It was then decided to model the Northeastern Utah Telelearning Project as an Electronic Blackboard with Audio-Teleconferencing. The term "Audiographic Teleconferencing" arises from this technology. After the decision was made of what technology would suit us best, considering our unique geography and needs, we worked with the Physics department at University of Utah and Wasatch Computer Systems, both of Salt Lake City to commission them to modify a computer program that had been successful at using IBM AT and IBM XT computers in a teleconferencing mode (Computer Network over phone lines) to present simply made computer graphics drawn with an electronic pencil on a computer sketch pad by a teacher with minimal computer skills. After the computer program was available, IBM ant the Utah State Office of Education participated in a State grant to the Northern Utah Educational Service Center of Heber City, Utah and to the Northern Utah Telelearning Project of $103,000 to purchase equipment, software, audio teleconferencing devices, and inservice training. During the summer of 1985 the Northeastern Utah Telelearning system was installed at three area high schools in Northeastern Utah. The center for the three high schools was the Uintah Basin Area Vocational Center in Roosevelt, Utah. The AVC was chosen because it was centrally located, had a

commitment to secondary education in the affected school districts, and had the personnel capable of operating such a system. After the equipment was installed, a brief inservice was conducted for the "teleteachers" and the "teleteacher-assistants" and their administrators by the software developer, University of Utah Physics Department, and the telephone engineers.

IMPLEMENTATION OF DISTANCE LEARNING

It was determined that the first year of operation would be a pilot project for distance learning. The schools were supportive but wary that is could fail if there was not support for the project by all involved. The administration felt that parents, teachers, students, principals, and the public needed to be aware of the project and how it could benefit the schools and the public in general. The project coordinator was instructed to promote the project through school visitations, media coverage, letters to parents, attending school board meetings, and community service projects using the telelearning system.

Three master teachers were identified who taught subjects needed by the cooperating schools. Three classes were began. Advanced Placement English, Chemistry/Physics for High School, and Advanced Placement History. Teachers prepared traditional classes on the audiographic Teleconferencing equipment (IBM computer and telephone conferencing box). Floppy disk storage facilitated storage of computer graphics (slates) for future use during class time. Classes were conducted by the teacher in the Center School

teaching two to 20 students at the three schools. Typically the teacher could not see his students. Occasional visits to the schools by the teacher for socialization and discipline concerns helped the teachers and students become accustomed to telelearning.

GOALS OF NORTHEASTERN UTAH TELELEARNING PROJECT

AS soon as the project began, the goals that were determined to be its guiding force immediately were began and later within several years, would be expanded upon. The goals were to 1). Provide additional instructional programming for secondary and adult students in the high school and college course work, providing educational equity to all rural students to be sure they met core curriculum requirements. 2) expand higher education and college credit offering to rural areas within the service area. 3) expand the informational/educational delivery service to all citizens within our service area.

Being a state funded (productivity grant) operation, it was necessary that outside evaluation of the effectiveness of the distance learning project be undertaken. The reader is referred to the bibliography for a complete evaluation, but we have included the following: (Della-Piana, 2)"

> "We have been impressed with the tele-learning in the Northeastern Utah Educational Services area. The program is clearly in the formative stages (July 1986), and there are a number of areas that will need to be improved. That being said, the tele-learning system works well and is reasonably well received by students, Its strong points are it use of computer graphics, its ability to reach geographically isolated students, and its ability to provide qualified instruction in advanced areas when such instruction would not

be provided (due to a lack of qualified faculty at eh remote school. It is not, however, a panacea. It is not superior to a traditional class taught by a qualified teacher (this was written before television was added!)...When used as a curricular enhancer, it has tremendous potential. Students in small, rural schools, who would otherwise find themselves at an educational disadvantage, can close the gap between themselves and their counterparts in larger urban school. Upon college entry, rural students who have engaged in tele-learning should have far less "catching up" to do. We do not believe the value of tele-learning is limited to the college bound student either. Students who wish to pursue careers in vocational/trade areas (e.g., agriculture) should also be able to enhance their high school training through courses taught via tele-learning. The potential exists to serve a wide range of the community through this program."

OPERATION OF THE DISTANCE LEARNING PROJECT

After one year of pilot operations and two successful years of operations in which over 450 students have benefitted from the distance learning system, I would offer the following as comments on the successful day to day operation of the telelearning network: 1) Administrative support for the concept of distance learning as well as operational needs (e.g. personnel, textbooks, inservice training, postage, travel expenses). 2) Planning by principals ant other administrators in the fall of each year for the upcoming school year. Class offerings, bell schedules, master teacher assignments, fiscal responsibility, teacher awareness, publicity, etc. 3) Establish credibility of the system. Master teachers should effectively work within the school system over the telelearning lines. Students must earn their grade as in any other class. 4) Involve parents, administrators, and the public in the distance learning project. Be media conscious.

In summary, we of the Northeastern Utah Telelearning Project have found that distance learning can be an effective alternative in providing quality, cost-effective educations to rural students separated by geography or other barriers. In paraphrasing Hess (3), "...As the cost of education goes up, access goes down. Access is even less in rural and economically depressed areas. Both factors contribute to the inequity in education-the haves keep having and the have-nots don't. It costs less to move information that people. Electronic highways can carry instruction to students as asphalt highways can carry students to instruction...only they can do it less expensively. Some significant portion of our education can be provided in this way if we're willing to work at it. The result will be greater productivity in education particularly when the high technology applications are used."

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